



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Bell et al.

SERIAL NO.: 10/008,628

FILED: December 6, 2001

TITLED: DISPERSANTS AND LUBRICATING OIL  
COMPOSITIONS CONTAINING SAME

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Examiner: E. McAvoy

Art Unit: 1764

Atty. Docket No. 2001L006

Assistant Commissioner for Patents  
Washington, DC 20231

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RESPONSE

Sir:

This paper is responsive to the Office Action mailed June 6, 2003, the period for response to which has been extended one month through and including October 6, 2003 by concurrently filed petition.

This application contains claims 1 through 23, as originally filed. No amendments to the Specification or Claims are proffered.

The invention is directed to the discovery that a narrow class of dispersants that are the reaction product of a polyalkenyl-substituted mono- or dicarboxylic acid, anhydride or ester; and a polyamine, in the presence of boron in an amount such that the ratio of the wt. % of boron to the wt. % dispersant nitrogen (B/N) is within a narrow defined band, provide an unexpected improvement in lubricating oils. Specifically, it has been found that nitrogen-containing dispersants having a functionality within the limited range of greater than 1.3 to less than 1.7, in the presence of an amount of boron such that the B/N ratio is from about 0.05 to about 0.24, provide improved piston cleaning properties when used in internal combustion engine lubricating oil compositions.

Claims 1 through 23 were previously rejected under 35 USC Section 103(a), for being unpatentable over U.S. Patent No. to Meinhardt et al. (hereinafter "the Meinhardt et al. patent").

The rejection presented in view of the Meinhardt et al. patent was withdrawn and claims 1

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through 23 were subsequently rejected as being unpatentable over U.S. Patent No. 6,008,165 to Shanklin et al. (hereinafter "the Shanklin et al. patent"). The Shanklin et al. patent is directed to a lubricating oil composition comprising, in combination, a borated dispersant of the type described in the Meinhardt et al. patent, a metal salt of a phosphorus acid (ZDDP), a detergent and a borate ester, wherein the combination of the borated dispersant and the borate ester provide the lubricating oil composition with 20 to 800 ppm of boron. It was noted that the materials of some of the Examples of the Shanklin et al. patent had a B/N ratio within the presently claimed range.

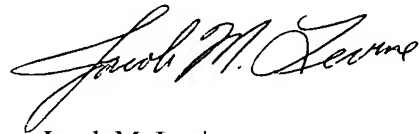
The Shanklin et al. patent discloses generally materials that are the borated reaction product of a polyalkenyl-substituted mono- or dicarboxylic acid, anhydride or ester; and a polyamine, and that such materials are useful as lubricating oil dispersants. The Shanklin et al. patent, like the Meinhardt et al. patent, describes broadly the functionality of the dispersants, requiring only that said functionality be at least 1.3. Further, the Shanklin et al. patent only generally describes the absolute amount of boron present, and not an amount relative to the amount of dispersant nitrogen. While some of the Examples of the Shanklin et al. patent have a B/N ratio within the scope of the present claims, the majority of Examples do not and there is no suggestion in the reference that the B/N ratio is in any way relevant to the performance of the lubricating oil composition. The Shanklin et al. patent, like the Meinhardt et al. patent, fails to suggest that dispersant compositions having simultaneously a functionality within the limited range of greater than 1.3 to less than 1.7, and a B/N ratio of from about 0.05 to about 0.24, will provide any significant benefit over similar dispersant compositions outside the scope of the present claims.

An interview was conducted on September 24, 2003, and applicants thank the Examiner for the courtesies extended to their representative at that time. During the interview it was noted that, while the claimed materials fall within the broad disclosure of the Shanklin et al. patent, the specific materials now claimed are not expressly disclosed, and have been found (by applicants) to provide additional benefits neither recognized nor suggested by the teachings of the Shanklin et al. patent. As was discussed, said benefits are clearly demonstrated by the comparative test results of the present specification, as summarized in Table 2 (page 34). In view of the above, it was indicated that the Section 103 rejection presented in view of the Shanklin et al. patent would be withdrawn.

Claims 1 through 23 stand further rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 through 24 of co-pending (and concurrently filed) Application No. 10/010,668. Applicants enclose herewith a Terminal Disclaimer disclaiming the terminal portion of any patent granting on the present application that would extend beyond the normal expiration date of any patent that may grant on U.S. Patent Application Serial No. 10/010,668. Applicants submit that the Terminal Disclaimer renders moot the obviousness-type double patenting rejection, and places the present application in condition for allowance.

Based upon the foregoing, applicants submit that the claims of this application distinguish over all cited prior art references. Therefore, applicants respectfully request that all rejections be withdrawn, and the above-identified application now be passed to issue.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Jacob M. Levine". The signature is fluid and cursive, with the first name "Jacob" being the most prominent.

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